Operating Instructions

Dehumidified air dryer
CTT 40
CTT 70

64.10-0214GB11 07/03

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These operating instructions are for*:

(* Please fill in personally)

Serial number: _____

Year of manufacture: _____

Date of delivery: _____

Number of delivery: _____

Date of commissioning: _____

Location: _____

Group of machines: _____

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☐ _

☐ _

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1. General Information

These operating instructions are addressed to all users of the device.

These operating instructions must be used by every person charged with work on the unit.

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1.1. Warnings and symbols

The following warnings and symbols are used in these operating instructions:

This symbol indicates danger to life! Fatal or serious injury is possible if the corresponding instructions, regulations or warnings are not observed.

This symbol indicates that serious injury is possible if the corresponding instructions, regulations or warnings are not observed.

This symbol indicates that extensive damage to equipment is possible if the corresponding instructions, regulations or warnings are not observed.

This symbol indicates information important for becoming familiar with the equipment, i.e. technical correlations.

This symbol indicates that a technical term is explained at this point.

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When disposing of drying agents / batteries / oil, observe all official rules.

Caution: High noise pollution !
For all work on the equipment, hearing protection should be worn.
Avoids impairment of hearing!

Caution: Danger of crushing !
Disconnect the equipment from mains supply before starting mainenance procedures. All compressed air pipes on the equipment should be depressurised before starting maintenance work.

Caution: Danger of hot surface !
Before starting any work wait until all parts have been cooled down sufficiently. Avoid touching any of these parts!

Caution: Danger of skidding !
Remove any granules remaining on the ground.

Caution: Danger to life through electrical shock !
Observe that the control system is still under voltage even when the main switch is switched off.

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1.2. Explanations and information

Various terms and designations are used in these operating instructions to ensure clarity. Therefore please note that the terms used in the text stand for the corresponding explanations listed below.

- Equipment
  ”Equipment” can mean an individual unit, a machine or an installation.

- Operating personnel
  The ”operating personnel” are persons operating the equipment on their own responsibility or according to instructions.

- Operator
  The ”operator” of the equipment (production manager, foreman, etc.) is the person responsible for all production sequences. The operator instructs the operating personnel of what is to be done.

- Operating instructions
  The ”operating instructions” describe the interaction of the equipment, production sequences or methods. The operating instructions must be compiled by the operator of the equipment.

- Equipment foreman
  When several operating personnel work on one machine, the ”equipment foreman” coordinates the sequences. The equipment foreman must be appointed by the operator.

- Trained personnel
  ”Trained personnel” are persons who, due to their training, are authorized to carry out the required work.

1.3. Legal basis

See “Manufacturer’s Certificate” resp. “Certificate of Conformity”.

1.4. Fields of applications

For the drying of thermoplastic granules and regrind before processing in order to remove all remaining moisture from the granules both inside and out, independent of climate or ambient air conditions. Due to the compact construction, the dryer can be employed next to the processing machine.

1.5. Notes on Usage

- Experienced operators can begin directly with the chapter on “Start-up” if the unit has been properly installed.

- If the unit has not been installed yet, observe the instructions in the chapter on “Assembly Instructions” and “Transport, Assembly and Storage”.

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2. Safety instructions

These safety instructions apply to all persons within the range of action of the equipment.

Please inform all persons within the range of action of the equipment of the direct and indirect hazards connected with the equipment.

These operating instructions are to be used by all persons assigned activities connected with the equipment.

Knowledge of the English language is prerequisite.

Ensure in each case that the operating personnel are familiar with the operating instructions and the function of the equipment.

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2.1. For your safety

General

The operating personnel of this equipment must be at least 16 years old.

Please read these operating instructions carefully before taking into operation for the first time. Contact us should questions arise. This avoids injury and damage to equipment!

These operating instructions must be kept available at all times at the place of operation of the equipment. Improper operation results in danger of accidents!

Please note that, for reasons of clarity, not all conceivable cases regarding operation or maintenance of the equipment can be covered in these operating instructions.

Please observe all safety instructions and warnings on the equipment. This avoids injury and damage to equipment!

All work on the equipment is to be carried out by persons whose qualifications are specified in the pertaining chapters of the operating instructions. Improper operation results in danger of accidents!

The proper working clothes are to be worn during any work on the equipment. This avoids injury!

The local regulations and requirements pertaining to this equipment must be observed.

Disconnect electrical components from the mains supply before work is carried out on these components Caution: Danger to life through electrical shock!

Compile detailed operating instructions based on these Operating instructions for the sequence of procedures to be carried out on this equipment. Improper operation results in danger of accidents!

Observe that the control system is still under voltage even when the main switch is switched off. Caution: Danger to life through electrical shock!

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Assembly

Compare the connected loads with those of the mains supply. Danger of injury through electrical shock!

When using lifting gear, please observe the pertaining regulations. Caution: Danger of accidents!

Do not modify, add other equipment or change the design of the equipment without the approval of the manufacturer. Caution: Danger of accidents!

Attachments not supplied by Colortronic must be manufactured in accordance with safety regulation EN 294. Danger of accidents!

The equipment may only be operated when all the associated components are properly connected up and in accordance with the relevant regulations. This avoids injury and damage to equipment!

Operate the device only if all its components are grounded. Danger: accident through electrical shock!

Please note for installation that the equipment is top-heavy. Danger exists that it may topple over!

Take care that the device is not standing on the mains cable. This will prevent danger to people and material!

Operation

Appoint an equipment foreman to be responsible for the equipment.

Ensure that the operating personnel are provided detailed instruction in the operation of the equipment. Improper operation results in danger of accidents!

When the main switch is switched off for reasons pertaining to safety, it must be secured against unauthorized activation. Caution: Danger of accidents!

Repair work may be carried out by trained personnel only. Caution: Danger of accidents!

Never operate the equipment when partially dismantled! Danger! Limbs may be caught in machinery! Electric shock!

In case of malfunction, shut down the equipment immediately. Have malfunctions corrected immediately. Danger of accidents!

The machine is intended only for the drying of granulated plastics. Any other or additional use is contrary to specifications.

This equipment is not suitable for food processing.

The safety instructions of the connected machines must be followed.

Please note that sound levels exceeding 85 db(A) may in the long term damage your health. Use the appropriate ear muffs. This avoids impairment of hearing!

Please note that the drying cells, drying hoppers and air pipings grow hot during use. Avoid touching any of these parts! Danger: Injury through burns!

Never operate the dryer without side panels. Danger: Limbs may be caught in machinery! Injury through burns!

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When drying plastics which emit gases dangerous for human health, take care that the regeneration exhaust air is disposed of without polluting the environment. This will prevent danger to people and material!

Maintenance

Before starting maintenance work, appoint a supervisor.

Inform the responsible personnel before maintenance work on the system is started. Caution: Danger of accidents!

Disconnect the equipment from mains supply before starting maintenance procedures to ensure that it cannot be switched on unintentionally. Caution: Danger of accidents!

All pipes, hoses and screwed connections should be checked regularly for leaks and damage. Any faults which arise should be corrected immediately. Danger of accidents!

Depressurise all compressed air piping before starting maintenance work. Danger of accidents!

The air filters should only be cleaned/replaced when the the main switch is off and the blower has stopped. This avoids injury and damage to equipment!

Any maintenance work on the equipment should only be started when the the main switch is off and the blower has stopped. This avoids injury and damage to equipment!

Check the v-belts of the blower only when the main switch is switched off and the blowers have stopped. Caution: Danger of accidents!

Open drying hoppers only if they are completely empty. Danger of accidents!

Never open drying hoppers while the device is in operation. Danger: Injury through burns!

Open drying hoppers only if they have been cooled down sufficiently. Danger: Injury through burns!

Before starting maintenance work wait until the drying cells, drying hoppers and air pipings have been cooled down sufficiently. Avoid touching any of these parts! Danger: Injury through burns!

Remove any granules remaining on the ground. Danger of accidents!

Arrest the wheels after installation if the dryer is mounted on a movable frame. This will prevent danger to people and material!

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2.2. For the safety of the devices

Never change settings without carefully assessing the consequences.

Use only original Colortronic spare parts.

Observe the maintenance instructions.

Keep a record of all maintenance works and repairs.

Please note that electronic components can be damaged by static discharge.

Before initial operation and in regular intervals, make sure that no electrical connections are loose.

Never readjust sensors without exactly knowing their functions.

Please ensure that the permitted storage temperature lies between 0 and +55 °C (32 to +131 °F).

Please ensure that the permitted operation temperature lies between 0 and +45 °C (32 to +113 °F).

Check the direction of rotation of the blowers after the electrical connections have been made (see rotational direction arrow).

Clean the drying hoppers before the first filling.

Note the instructions of the material manufacturer for the maximum drying temperature.

Note the drying instructions of the material manufacturer.

Take care that the drying hoppers are always completely filled and that the retention period is respected if continual removal is taking place.

Note that too large amounts taken from the drying hopper lead to insufficient drying of the material.

Close the air stop valves of drying hoppers which are empty or have not been used.

Note down all data which you have entered into the control system.

The password is to be entrusted to authorised personnel only.

Please note that the temperature of the dryer heating system must always be set lower than that of the supplementary heaters.

When you dispose of drying agents, observe all official rules.

Note that drying cells are replaced or refilled by Colortronic only if they are empty.

The material level may not fall below 40 % in the drying hopper, when material is continuously removed from the drying hopper, but no material is continuously fed into the drying hopper (batch drying). Close the throttle valves.

Read the operating manuals of the connected devices.

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3. Start up

This chapter is addressed to the operators of the machine.

This chapter assumes general skills with drying equipment.

This chapter assumes that the functional description has been read and understood.

It must be ensured that the operators have the required experience.

Make sure that the main switch is at “0" position.

Check the drying hopper for cleanliness.

Check to see whether the adhesive film on the drying hopper has be removed.

If there is a return air cooler, switch on its coolant circuit.

If there is a timer clock (optional), adjust it. Read the operating manual of the timer clock.

Check whether the release switch “Timer” and the release switches “Hopper” (TT1, TT2) are at ”0" position.

The signal lamp “trouble” may flash shortly while the valve block is changed.

If ordered temperature can be displayed in °F !

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3.1. Initial Operation

Check whether the inlet of the drying hopper is closed by a blind lid, or whether a conveyor unit (optional) is installed.
If not, manufacture a suitable blind lid and install it on the inlet of the drying hopper or install the conveyor unit (optional).

Attachments which are not supplied by Colortronic must be manufactured according to the safety regulation European Standard 294.

Check whether the coolant circuit of the return air cooler is turned on (if a return air cooler is installed).

3.1.1. Switching on the Dyer

Switch on the main switch of the dryer.

The signal lamp “power” goes on.

For operation with timer clock (optional):
Turn the release switch “Timer” at position:

For operation without timer clock:
Turn the release switch “Timer” at position:

The blower is running.

If the dryer has not been in use for several months it must be operated for about 2 hours without material.

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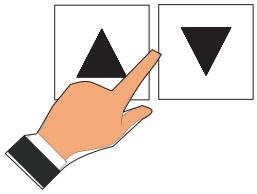
Turn the release switches “Hopper” (TT1, TT2) at “I” position.

Turn the thermo regulator to +80 °C (176 °F) for the drying temperature.

Press the “PGM” key.

Set by means of the arrow keys the drying temperature to “80" (176).

After 2 seconds the display flashes and the value is stored.



Press the “EXIT” key (the setpoint value and the actual value of the drying temperature are displayed).

After 2 hours turn the release switches “Hopper” (TT1, TT2) at “0” position.

Turn the release switch “Timer” at position: ◯

☹

Wait until the blower has stopped.
The run on time of the blower is 10 minutes.

If there is a return air cooler installed, switch off its coolant circuit.

Switch off the main switch of the dryer.

📖

The signal lamp “power” goes off.

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3.2. Continuous Operation

Fill at least half of the drying hopper with material.

3.2.1. Switching the Dryer on

Switch on the main switch of the dryer.

The signal lamp “power” goes on.

For operation with timer clock (optional):
Turn the release switch “Timer” at position:

For operation without timer clock:
Turn the release switch “Timer” at position:

The blower is running.

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3.2.2. Setting the Drying Temperature

Turn the release switches “Hopper” (TT1, TT2) at “I” position.

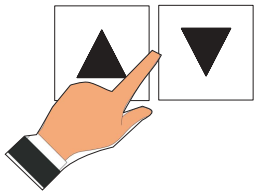
For each drying hopper, set the required drying temperature (= desired value) by means of the respective thermo regulator.

Check whether the set drying temperature is appropriate for the materials which have been filled in.
Observe the instructions of the material manufacturer.

After the first filling, process the material only after the retention period is over.
Observe the instructions of the material manufacturer.

Press the “PGM” key.

By means of the arrow keys select the desired value for the drying temperature.



After 2 seconds the display flashes and the value is stored.

Press the “EXIT” key (the setpoint value and the actual value of the drying temperature are displayed).

After a change of materials, immediately check and correct the set drying temperature.

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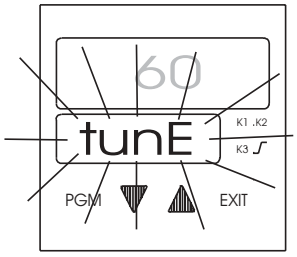
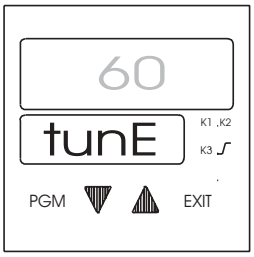
Optimizing the thermo regulator

Press the “EXIT” key for at least 2 seconds.

“tunE” flashes. The optimization can take several minutes.



If “tunE” stops flashing, the optimization is finished.



Press the “EXIT” key.

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3.3. Switching the Dryer off

Set the release switch “Timer” at position:

☹

Wait until the blower has stopped.
The run on time of the blower is 10 minutes.

If there is a return air cooler installed, switch off its coolant circuit.

Switch off the main switch of the dryer.

The signal lamp “power” goes off.

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4. Error and error correction

This chapter is directed at the operators of the equipment.

This chapter assumes general skills in dealing with drying systems.

This chapter assumes that the “start-up” description has been read and understood.

It should be ensured in each and every case that the operators have the relevant skills.

Faults must be eliminated before the control system can again start operating.

An alarm is indicated by steady light of the signal lamp “trouble”.

When the fault has been eliminated, the signal lamp “trouble” goes off.

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The following errors can lead to an alarm:

Blower
The pressure of the blower is too low.
Check the blower.
Vacuum sensor defective.

Regeneration heater 1
The safety temperature limiter of the regeneration heater 1 has been activated.
Check the safety temperature limiter.
Colortronic Service.

Regeneration heater 2
The safety temperature limiter of the regeneration heater 2 has been activated.
Check the safety temperature limiter.
Colortronic Service.

Hopper heater
The safety temperature limiter of the hopper heater has been activated.
Check the safety temperature limiter.
Colortronic Service.

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5. Maintenance

This chapter is intended for persons with skills in electrical and mechanical areas due to their training, experience and received instructions.

Personnel using the instructions in this chapter must be instructed of the regulations for the prevention of accidents, the operating conditions and safety regulations and their implementation.

Ensure in each case that the personnel are informed.

For maintenance work taking place at theights of over approx. 6 feet, use only ladders or similar equipment and working platforms intended for this purpose. At greater heights, the proper equipment for protection against falling must be worn.

Use only suitable lifting gear which is in proper working order and load suspension devices with sufficient carrying capacity. Do not stand or work under suspended loads!

Ensure that the electric motors/switch cabinets are sufficiently protected against moisture.

Use suitable workshop equipment.

Before starting maintenance work, appoint a supervisor.

Inform the responsible personnel before maintenance work on the system is started.

Never operate the equipment when partially dismantled.

Any maintenance and repair work NOT described here may only be carried out by Colortronic service personnel or by specialised staff authorised by Colortronic.

☹

Disconnect the equipment from mains supply before starting mainenance procedures to ensure that it cannot be switched on unintentionally.

All compressed air pipes on the equipment should be depressurised before starting maintenance work.

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Please observe the maintenance schedule.

Before starting maintenance work, clean the equipment of oil, fuel or lubricant.

Ensure that materials and incidentals required for operation as well as spare parts are disposed of properly and in an environmentally sound manner.

Use only original Colortronic spare parts.

Keep record of all maintenance and repair procedures.

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5.1. Maintenance schedule

Daily:	Check warning signs on equipment for good legibility and completeness
	Clean return air filters and casing (depending on dust build-up)
Weekly:	Check main switch for proper function
	Check the signal lamps for proper functioning
Every six months:	Change return air filters (depending on dust build-up)
	Clean air filter of the suction box
	All electrical and mechanical connections should be checked to see if they fit securely
Annually:	Dewpoint should be checked (only by Colortronic service personnel)
Whenever the material is changed:	The drying hopper and suction box must be cleaned

The service intervals refer to a 3-shift operation.

The given maintenance intervals are average values.

Check whether in your individual case the maintenance intervals must be shortened.

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5.2. Cleaning or Replacing the Air Filter

Set the release switch “Timer” at position:

☹

Wait until the blower has stopped.
The run on time of the blower is 10 minutes.

If there is a return air cooler installed, switch off its coolant circuit.

☹

Switch off the main switch of the dryer (the signal lamp “power” goes off).

Interrupt the mains supply so that the device cannot be switched on unintentionally.

📖

Clogged filters substantially reduce the amount of circulating air and lead to a production lag of your dryer. Clogged filters may also damage the heating elements.

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5.2.1. Cleaning or Replacing the Return Air Filter

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Detach the screw on the housing of the return air filter and remove the housing cover.

Remove the nut of the filter cartridge.

Remove the filter cartridge.

Clean the inside of the return air filter housing. Use non-fibrous cleaning cloths or an industrial type vacuum cleaner.

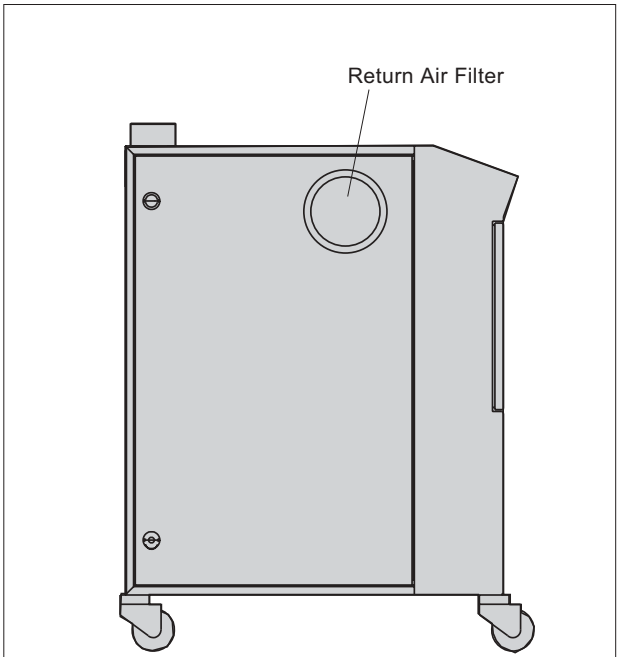
Blow compressed air from the inside out through the clogged filter cartridge **or** replace the filter cartridge.

Re-install the cleaned/new filter cartridge.

Mount the nut.

Install the lid of the return air filter housing.

Fix the screw.



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Never operate the dryer without return air filter.

Purchase order numbers return air filter CTT 40/70

when operating without return air cooler: ID 83957
when operating with return air cooler: ID 83956

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5.3. Disposing of Drying Agents

Please note that drying cells are replaced or refilled by Colortronic only if they are empty.

When disposing of drying agents, observe all official rules.

Since used drying agents may contain impurities from the dried materials, treat them as special waste.

It is not possible for Colortronic to take back the used drying agent or drying cells with used drying agents.

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5.4. Cleaning the Drying Hopper

Set the release switch “Timer” at position:

☹

Wait until the blower has stopped.
The run on time of the blower is 10 minutes.

If there is a return air cooler installed, switch off its coolant circuit.

☹

Switch off the main switch of the dryer (the signal lamp “power” goes off).

Interrupt the mains supply so that the device cannot be switched on unintentionally.

Clean the drying hopper each time you are changing the materials.

Make sure that the drying hopper has cooled down sufficiently.

Make sure that the drying hopper is completely empty.

Remove any granules remaining on the ground.

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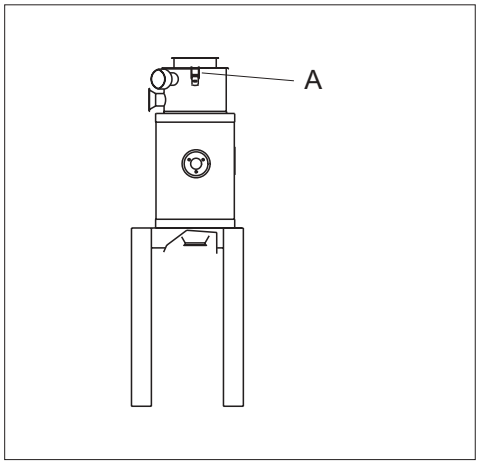
TT 25

Open the toggle-type fasteners (A) at the hopper lid and fold the hopper lid upwards (if in use: remove before the single conveyor).

Clean the drying hopper.

Close the hopper lid and close the toggle-type fasteners (A) (if in use: re-mount the single conveyor).



TT 25

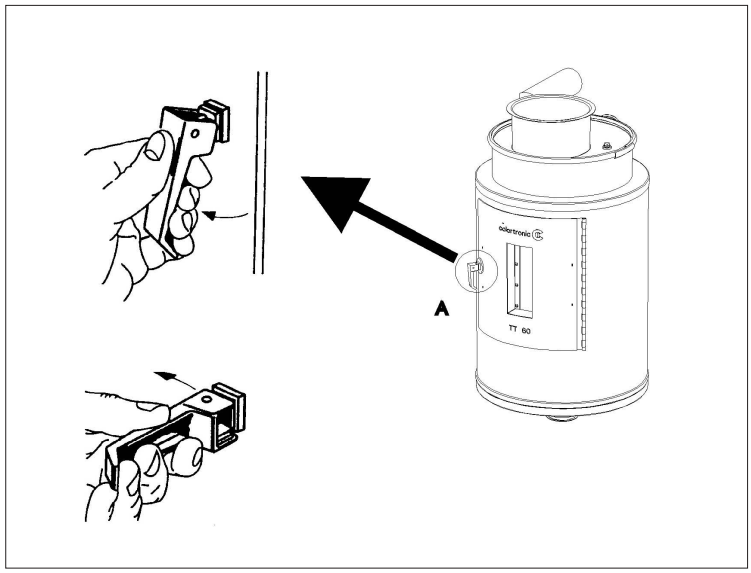
Remove any granules remaining in the cleaning opening.

TT 60 - 100

Open the cleaning opening of the drying hopper: Lift and turn the handle (A) to open the lock (if in use: remove before the single conveyor).

Clean the drying hopper.

Close the cleaning opening of the drying hopper: Turn the handle (A) until the cleaning opening is locked and then close the handle (if in use: re-mount the single conveyor).



TT 60 - TT 100

Remove any granules remaining in the cleaning opening.

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6. Functional description

This functional description is addressed to the operators of the equipment.

This functional description assumes general familiarity with drying equipment.

It should be verified that the operators do indeed have the appropriate skills.

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6.1. General Information

The dehumidified air dryers were developed for drying plastic granules. Due to their compact construction, they can be employed next to the processing machine (drying hopper on the processing machine) or with one or more drying hoppers as a movable facility (compact facility).

The dryers work according to the dehumidified air principle, i.e., the air is not only heated but also dehumidified before it flows through the drying hopper.

In this manner, plastic granules can be dried down to a very small residual moisture content.

The drying temperature can be adjusted, if necessary, up to a maximum of +180 °C (356 °F, upper limit). Due to the heat that is released during water absorption in the drying cells, the lower limit of the dehumidified air temperature is approx. +60 °C (140 °F).

The drying takes place continuously, i.e., there are no rest periods due to regeneration of the drying agent.

The dryer is rated for continuous operation.

The dryer may only be put into operation if the drying hopper is filled.

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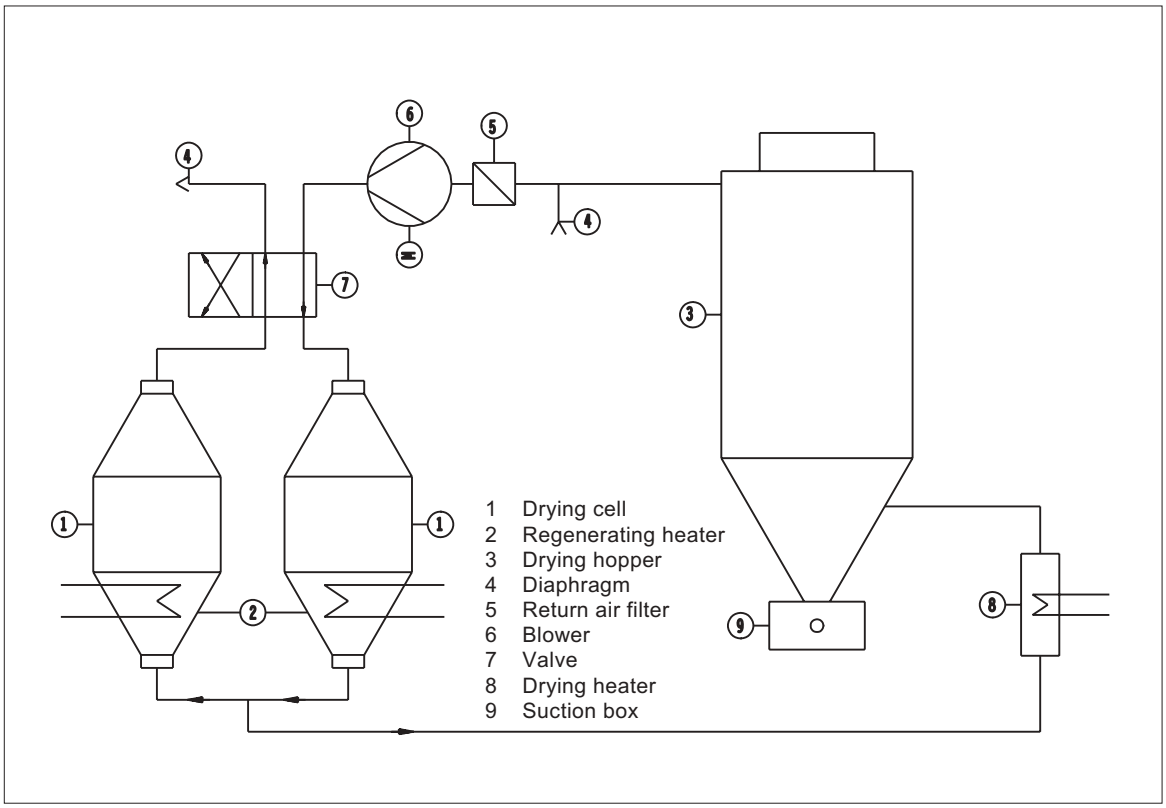
All function sequences are fully automatic.

The dryer is equipped with two drying cells. One drying cell is part of the drying cycle; the other drying cell is regenerated simultaneously.

Part of the dehumidified air is used for regenerating the moist drying cell. At the beginning of regeneration, it is heated by the regeneration heater. After the end of the heating period, the drying cell is cooled off by means of dehumidified air. After the switch-over time is reached, the regenerated drying cell is included in the drying cycle, and the cycle starts again.



Functional diagram

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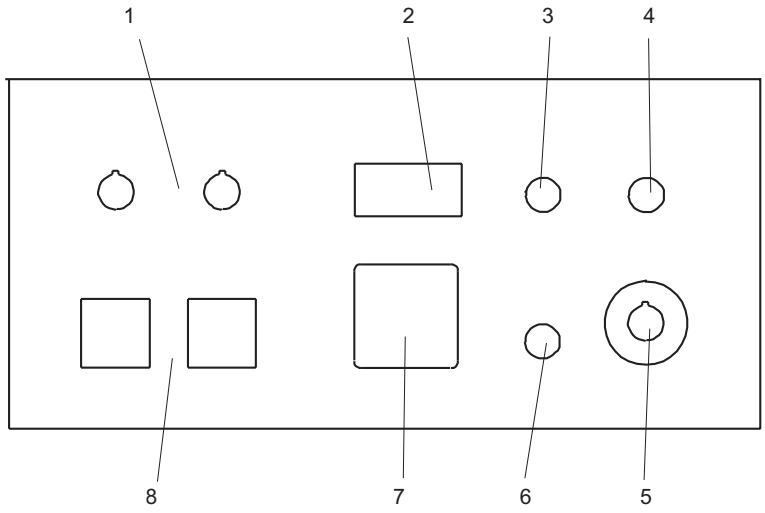
A digital display of the current dew point temperature can be supplied as additional equipment.

As an option, a timer clock can be supplied which switches the dryer on or off at preselected times.

Read the operating manual of the timer clock.



1 = release switch “hopper” TT1, TT2 (TT2 only CTT 70)
2 = dew point display (optional)
3 = signal lamp “power”
4 = signal lamp “trouble”
5 = main switch
6 = release switch “Timer”
7 = timer clock (optional)
8 = thermo regulator “drying hopper” TT1, TT2 (TT2 only CTT 70)

Operating unit

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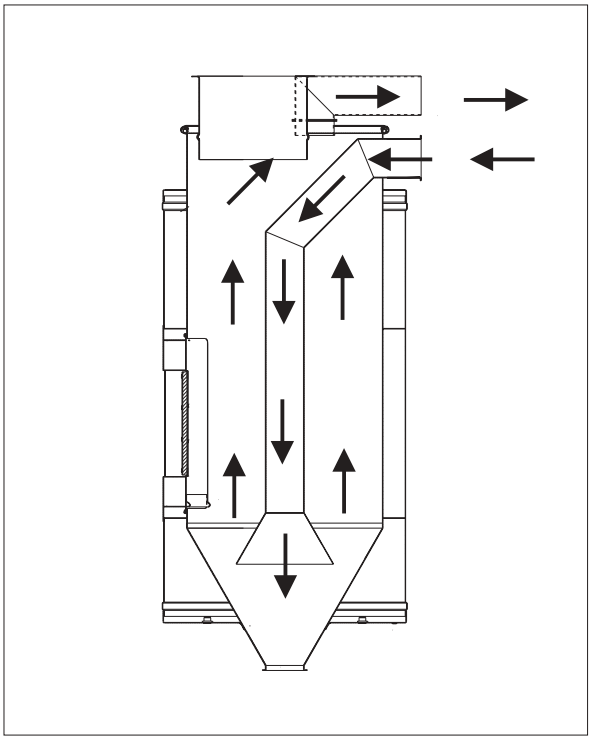
6.2. Drying Hopper (Optional)

The material is dried in the drying hopper. The dehumidified air is conducted through the material in the drying hopper and takes up moisture. Drying hoppers must have the appropriate dimensions for their specific use so that the desired final moisture content is reached. When refilling a drying hopper, the material must first be dried completely before material can be taken out for the first time.

If material is taken out continuously, there must also be a continual addition of material into the drying hopper (continuous drying process). New (moist) material is conducted into the upper opening of the drying hopper and slowly reaches the material outlet at the lower end. On its way from the upper to the lower end, the material is dried down to the final moisture content.

In order to guarantee a continuous drying process, we recommend that you always keep the drying hopper filled completely.



Drying Hopper

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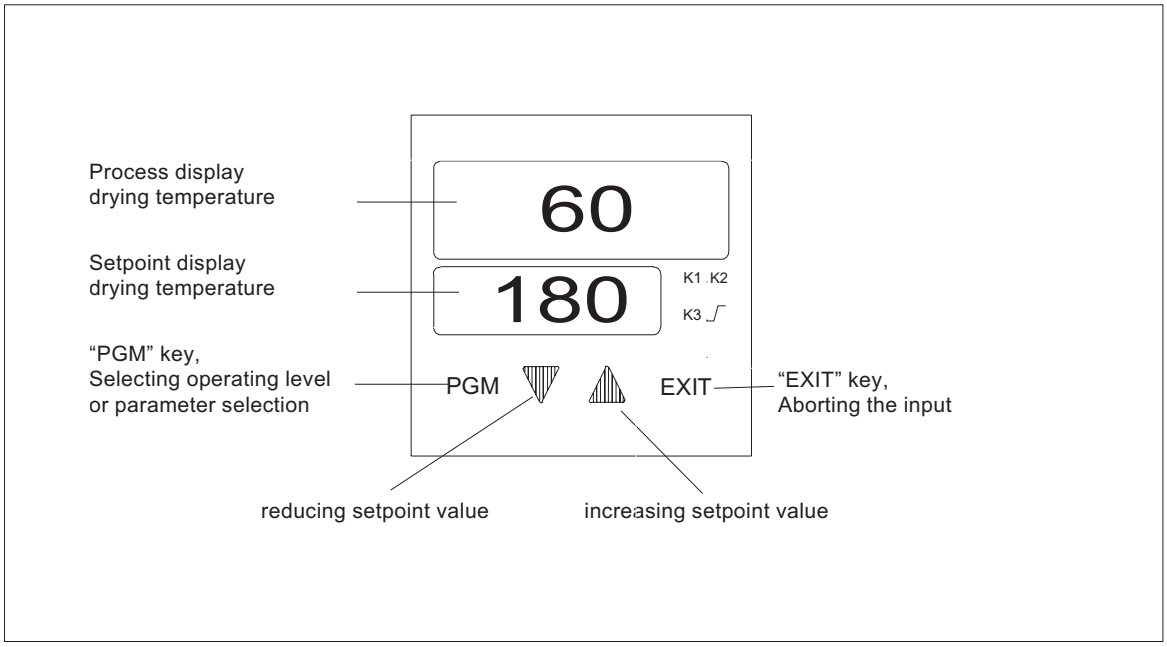
6.2.1. Hopper Heater

Each drying hopper has its own hopper heater. The temperature of the dehumidified air is adjusted by means of the thermo regulator. The setting range is from +60 - +180 °C (+140 - +356 °F). The current temperature can be read off the digital display (= actual value).

The thermo regulator is factory-programmed. Nevertheless, you have to set specific values which are dependent on the processed material.



Thermo regulator

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6.3. Connection to a Pneumatic Conveying System (Optional)

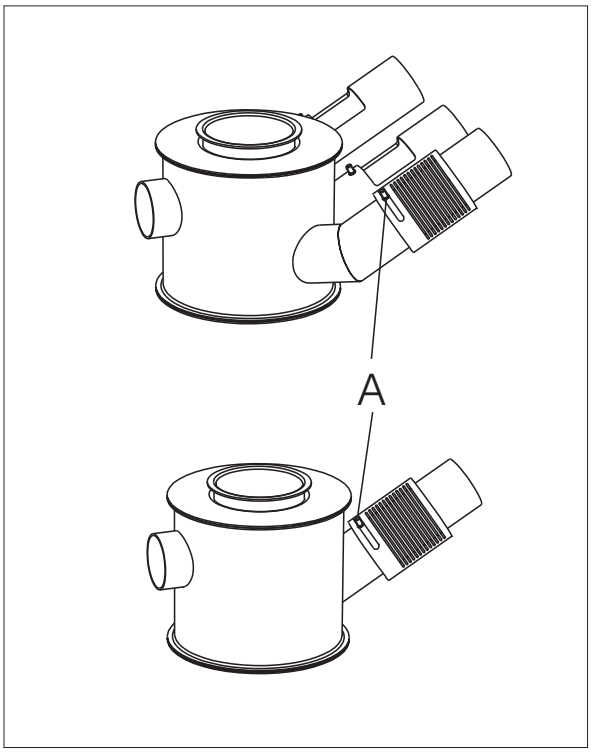
Your drying facility works best in combination with a pneumatic conveying system. In this way, your drying hopper will always be supplied with sufficient material.

The facility will only take as much material as is required by the processing machines. Therefore, the drying result will always be the same.

Colortronic drying hoppers are equipped with a suitable flange for adding a Colortronic pneumatic conveyor.

Suction boxes with one or three suction tubes can be supplied as well (optional). These suction boxes are developped specifically for this type of hopper.

The loading of the conveying line with material is adjusted by closing or by opening of the control cover (A).



Suction box

6.4. Return Air Cooler (Optional)

A return air cooler must be employed if the return air temperature is higher than +65 °C (149 °F).

A return air cooler improves the efficiency of the drying cells.

The lower the return air temperature, the better the efficiency of the drying cells.

The return air cooler can be connected to a coolant circuit or to the water mains network.

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7. Transport, Assembly and Storage

This chapter is intended for all operating personnel of the equipment.

Personnel using these instructions must be instructed in the regulations for the prevention of accidents, the operating conditions and safety regulations and their implementation.

Ensure in each case that the operating personnel are sufficiently informed.

Please inform all persons within the range of action of the equipment of the direct and indirect hazards connected with the equipment.

Please observe all safety regulations for the operation of lifting equipment.

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7.1. Tansport and Packing

Please ensure adequate carrying capacity of the lifting equipment.
Note that the dryer system is top-heavy. Risc of toppling!

The machine must not be tilted or laid on its side.

The equipment pass a rigorous operating test in the factory and are packed carefully to avoid transport damage.

Please check packing on delivery for transport damage.

The inlet and discharge flanges are sealed with plugs, so that no dirt can enter during transport. Plugs must be removed before assembly.

Packing materials should be disposed of according to environmental laws or reused.

The dryer or the compact unit is delivered on a pallet.

The dryer should only be moved by means of the appropriate lifting equipment (e. g. a fork lift truck or a workshop crane).

Fasten the transport cables to the eyelets of the control cabinets.

Transport must be shock-proofed and free from vibrations.

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7.2. Assembly

Please ensure adequate carrying capacity of the lifting equipment.

Check the carrying capacity of the point of installation, particularly if installed on a platform.

The place selected for installation should be as free of vibrations as possible.

The main switch must be freely accessible.

Ground the equipment against electrostatic charging.

The machine must not be tilted or laid on its side.

Because of its compact construction the dryer can be installed directly beside the processing machine (drying hopper on the processing machine) or with one or more drying hoppers as a movable facility (compact facility).

Special foundations are not necessary for installation.

The dryer must be installed on a level surface and must not be exposed to excessive humidity. The maximum permissible ambient temperature is 45 °C (113 °F).

To facilitate servicing, the dryer should be installed in such a way that that it is accessible from 3 sides. Make sure that the air filters can be changed without problems.

To conserve energy, keep the distance between dryer, hopper and processing machine as small as possible.

The wheels of the compact unit should be locked to ensure stable installation.

The foil should be removed from the drying hopper.

7.3. Storage

The control system may only be stored at temperatures from 0 to +55°C (32 to +131 °F).

Between delivery and machine commissioning the equipment should be stored in a dry, dust-free and vibration-free room.

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8. Assembly instructions

These installation instructions are intended for persons with skills in electrical and mechanical areas due to their training, experience and received instructions.

Personnel using these installation instructions must be instructed in the regulations for the prevention of accidents, the operating conditions and safety regulations and their implementation.

Ensure in each case that the personnel are informed.

The installation instructions provided in the corresponding operating instructions apply for all connected equipment.

Observe safety regulations with regard to lifting gear handling.

All installation work must be carried out with the equipment disconnected from electrical power and compressed air supply.

For installation work taking place at heights of over approx. 6 feet (1829 mm), use only ladders or similar equipment and working platforms intended for this purpose. At greater heights, the proper equipment for protection against falling must be worn.

Use only suitable lifting gear which is in proper working order and load suspension devices with sufficient carrying capacity. Do not stand or work under suspended loads!

Use suitable workshop equipment.

Install the equipment such that all parts are easily accessible; this facilitates maintenance and repair work.

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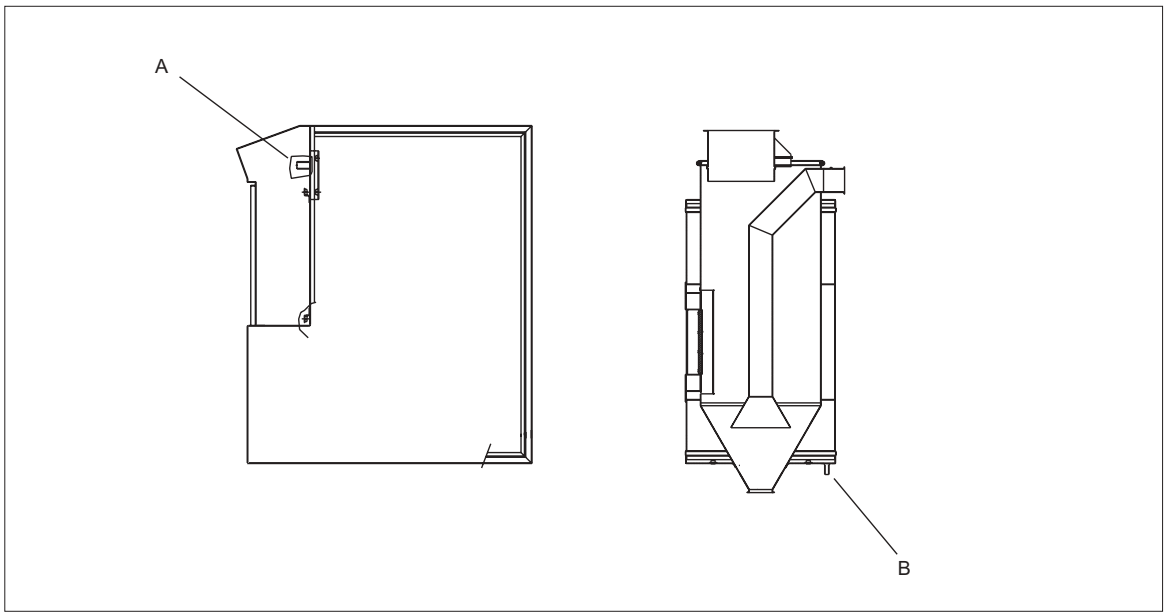
8.1. Installation of the exhauster fan for regeneration of exhaust air

When plastics are being dried that release harmful gases during the drying process, care must be taken that the regeneration exhaust air is disposed of in an environmentally sound way. At the same time the throughput of the regeneration blower must not be altered. It should be noted when assembling a disposal system (e.g. an exhauster system) that the regeneration exhaust air is very humid. Thus condensation may form, which must not under any circumstances return to the dryer.

8.2. Grounding the equipment against electrostatic charging

Considerable electrostatic charging may occur in the equipment during processing of the various materials. For this reason, all components must be sufficiently grounded, see grounding bolt dryer (A) and drying hopper (B).

Ensure that the regulations of the local electric supply company are observed.



Grounding the equipment

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8.3. Electrical Connection

Observe the rules of the local electricity board.

Check that the supply voltage and the power frequency are in accordance with the data on the name plate of the device.

The electrical connection may only be carried through or assigned by Colortronic service staff or by qualified staff authorized by Colortronic.

Other persons are not permitted to carry through the electrical connection.

The main switch must be freely accessible.

Ground the equipment against electrostatic charging.

Regularly make sure that none of the electrical or screw connections are loose.

Make sure that the main switch is at “0" position before the electrical connection is carried out.

Standard operating voltage is
CTT 40: . . . . . 230 V/AC/50 Hz (Europe),
. . . . . 230 V/AC/60 Hz (U.S.).
CTT 70: . . . . . 400 V/3 AC/50 Hz (Europe),
. . . . . 460 V/3 AC/60 Hz (U.S.).
Special voltages can be supplied on request.

The connected loads* are
CTT 40 . . . . . max. 1.3 kW,
CTT 70 . . . . . max. 2.0 kW.
*If hopper heaters are installed, the value of each hopper heater must be added to these connected loads (CTT 40: max. 1.5 kW, CTT 70: max. 3.0 kW).

The fuse protection must have
CTT 40 . . . . . 16 A,
CTT 70 . . . . . 16 A.

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8.4. Connection of Return Air Cooler (Optional)

A return air cooler must be employed if the return air temperature is higher than +65 °C (149 °F).

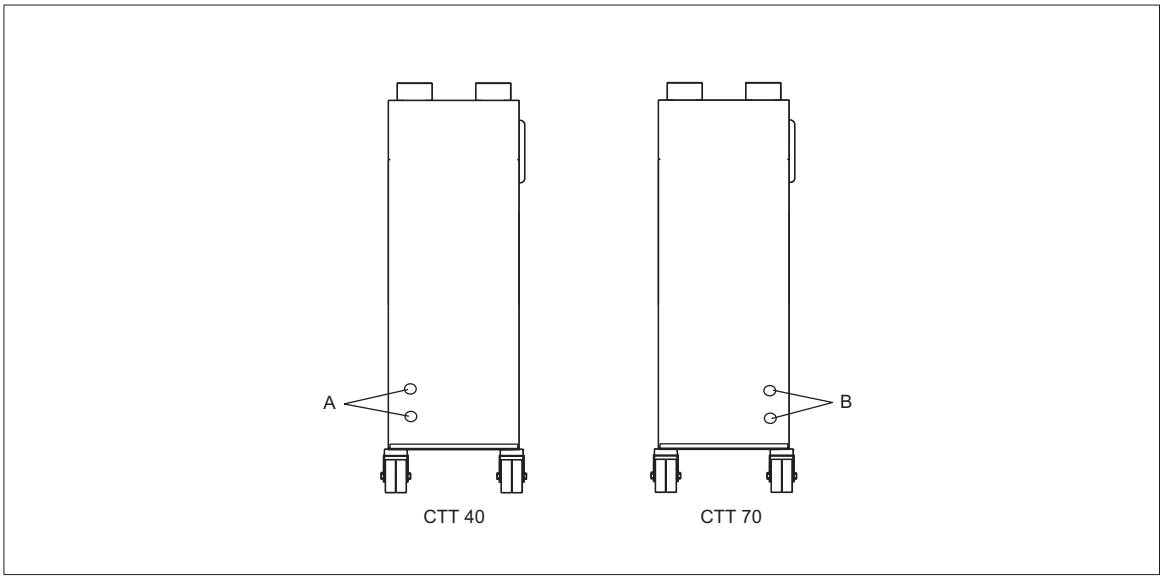
You can connect the return air cooler to a coolant circuit or to the water mains network.

The water flow rate in the water mains network* is for:
CTT 40 . . . . . approx. 0.2 m^3/h (7.16cf/h),
CTT 70. . . . . approx. 0.4 m^3/h (14.13 cf/h).
(*water temperature: +6 °C / 42.8 °F)
Rate your coolant circuit accordingly.

Connect the coolant in- and outlets to the return air cooler (Ø pipe connection: 12 mm / 0.5 in.).

Observe the flowing direction of the coolant.

Check the tightness of the connections.



Connection of Return Air Cooler CTT 40 (A) / CTT 70 (B)

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9. Technical data

Basic Version

- Central temperature controls for all heating elements to ensure constant temperature levels
- Safety temperature limiter for all heaters
- Drying temperature of each drying hopper can be set centrally at the dryer
- 2 drying cells for continuous operation
- Dry contact alarm output
- Optical alarm indication
- Maintainance free air valves
- Designed for optimal regeneration time due to constant monitoring of the moisture level in the drying cells

Optional Equipment

- Automatic alarm clock or timer
- Dew point display
- Return air cooler for processing high temperatures
- Pre-air filter
- Special color
- Special voltage

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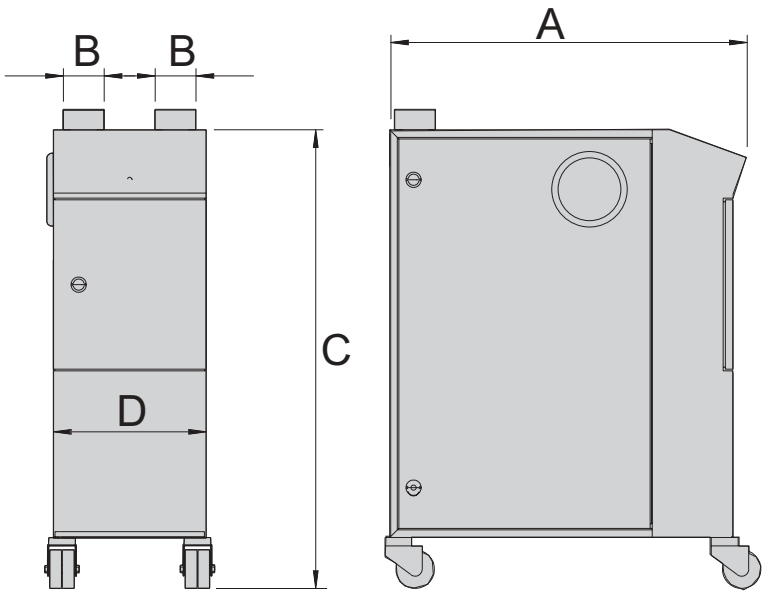
Performance

- Air drying capacity
  CTT 40: 40 m^3/hr (1,412.69 cf/h)
  CTT 70: 70 m^3/hr (2,472.03 cf/h)
- Operating voltage
  CTT 40: 230 V +/-10%, AC, 50 Hz (Europe); 230 V/AC/60 Hz (U.S.).
  CTT 70: 400 V +/-10%, 3AC, 50 Hz (Europe), 460 V/3 AC/60 Hz (U.S.)
- Connected load
  CTT 40: 1.3 kW +max. 1.5 kW hopper heaters
  CTT 70: 2.0 kW +max. 3.0 kW hopper heaters
- Average dewpoint temperature of -50° C (- 76 °F)
- Weight
  CTT 40: approx. 68 kg (149.9 lbs.)
  CTT 70: approx. 103 kg (227.17 lbs.)
- Noise level
  CTT 40: approx. 61 dB (A)
  CTT 70: approx. 66 dB (A)

Dimension Sheet



	CTT 40	CTT 70
A	700 mm / 27.5”	900 mm / 35.5 “
B	80 mm / 3.2”	80 mm / 3.2”
C	900 mm / 35.5”	900 mm / 35.5”
D	300 mm / 11.8”	400 mm / 15.7”

Dimensions and data without obligation. Dimensions in mm. Specifications may be subject to alterations.

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10. Spare parts list

This spare parts list is intended to be used only by trained personnel.

Other persons are not permitted to modify or repair the equipment.

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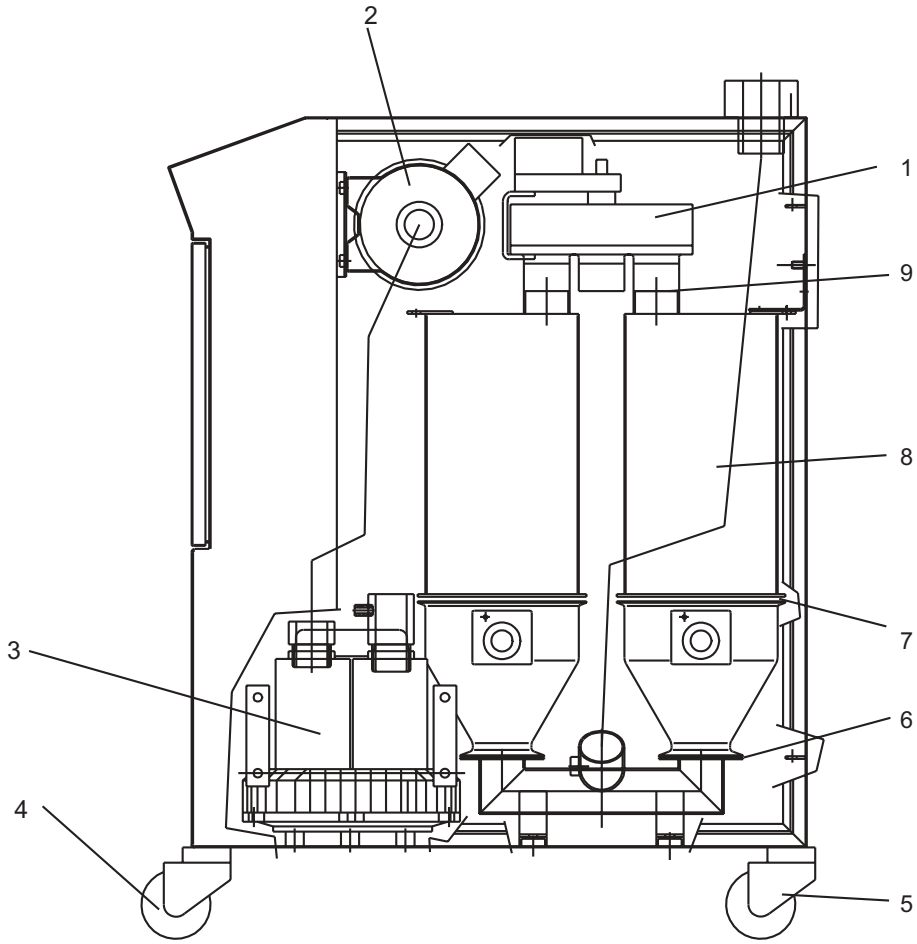
CTT 40



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Pos.	ID-number	Description
1		valve stem
	31940	shaft
	31938	housing
	36212	disc with bush
	84130	disc flywheel DU
2	83957	filter cartridge, when operating without return air cooler
	83956	filter cartridge, when operating with return air cooler
3	84129	blower CTT 40
4	85819	guide roll with fixing device
5	85820	guide roll
6	94233	sealing
	93298	hose clamp
7	85690	sealing
	85691	tension ring
8	96196	desiccant (6 kg / 13.23 lbs.)
9	96353	sealing
	92361	tension ring

Return air cooler (optional)

33848	return air cooler
83972	hose

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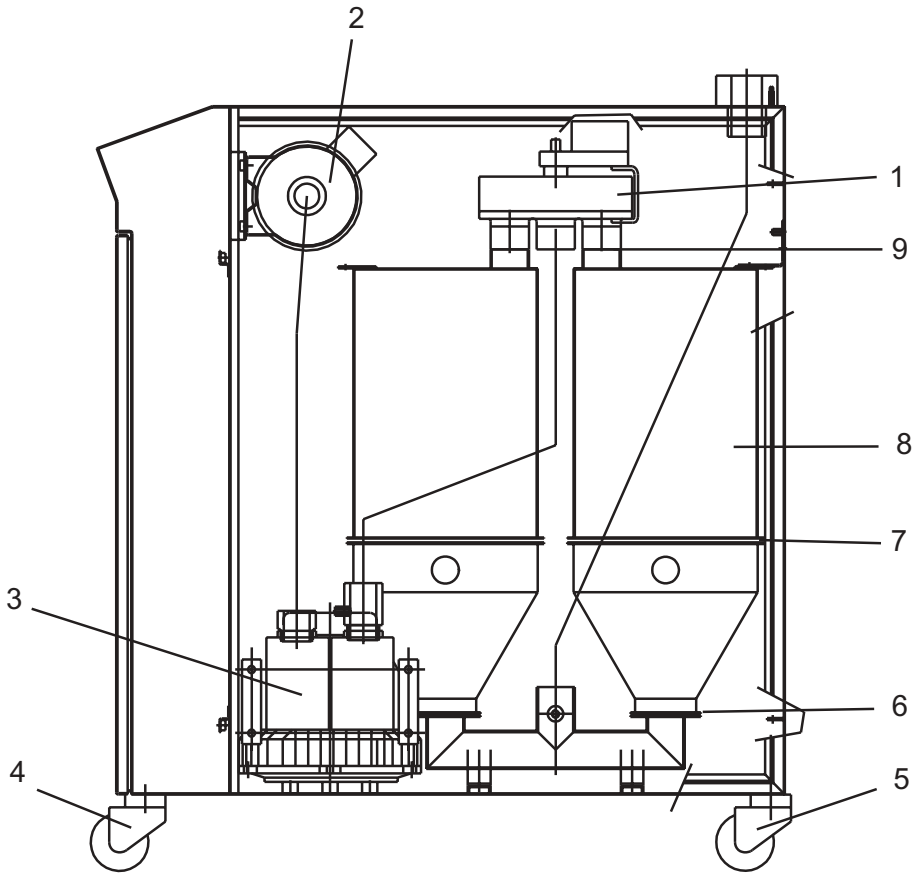
CTT 70



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Pos.	ID-number	Description
1		valve stem
	31940	shaft
	31938	housing
	36212	disc with bush
	84130	disc flywheel DU
2	83957	filter cartridge, when operating without return air cooler
	83956	filter cartridge, when operating with return air cooler
3	85677	blower CTT 70
4	85819	guide roll with fixing device
5	85820	guide roll
6	94233	sealing ring
	97677	tension ring
7	23917	sealing ring
	97677	tension ring
	23533	sieve
8	96196	desiccant (13 kg / 28.76 lbs.)
9	96353	sealing
	92361	tension ring

Return air cooler (optional)

29786	return air cooler
83972	hose

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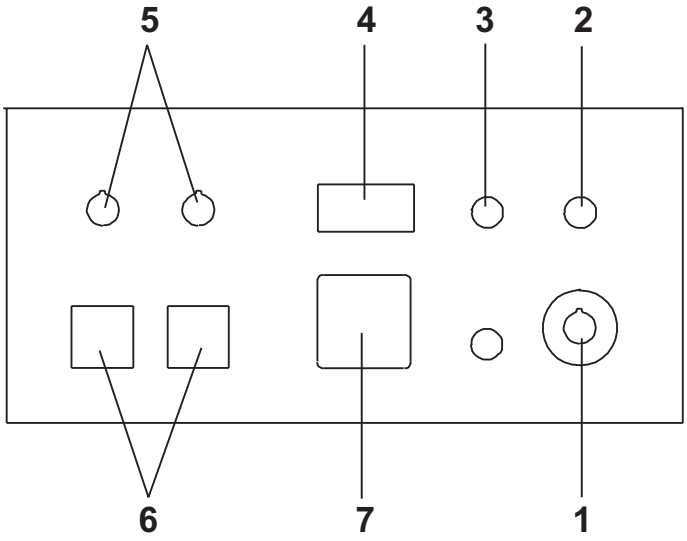
Operating unit



Pos.	ID-number	Description
1	82368	main switch
2	82394	LED element, green
	82393	cap
	82495	fixing adapter
3	82494	LED element, white
	82392	cap
	82495	fixing adapter
4	26207	dew point display (optional)
5	82395	selector switch actuator
	82490	contact element
6	87454	thermo regulator TT1, TT2
7	85241	timer clock (optional)
	83646	sealing

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Control unit CTT 40

85280	motor
84131	radiator 0.7 kW
83339	pull-button
87440	contact element
83411	controller
82516	temperature limiter
88440	contactor
85941	terminal
85940	fuse
99102	fuse
88806	relay holder
88816	relay
84510	thermal breaker

Hopper heater

85688	radiator 1,5 kW
85652	safety temperature limiter

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Control unit CTT 70

85279	motor
85676	radiator 1.2 kW
95816	pull-button
87440	contact element
83329	controller
85275	temperature limiter
88914	contactor
85254	power supply
88907	terminal
99815	fuse
88806	relay holder
88849	relay
83624	terminal
84512	thermal breaker
84159	control switch

Hopper heater

85343	radiator 1,5 kW
84512	thermal breaker
85652	safety temperature limiter (= STB)
85338	radiator 3 kW
84510	thermal breaker
85652	STB

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11. Electrical manual

This electrical manual is intended to be used only by Colortronic service personnel and trained personnel authorized by Colortronic.

Other persons are not permitted to modify or repair the equipment.

☐ Connection diagram no.: _

☐ Currently not available; will be delivered at a later date !

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12. Accessories

- ☐ Basic setting thermo regulator
- ☐ Digital timer
- ☐ Spare parts list Drying Hoppers TT 25 - TT 6400
- ☐ _
- ☐ _

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Basic setting thermo regulator CTT 40

This information is intended to be used only by Colortronic service personnel and trained personnel authorized by Colortronic.

Other persons are not permitted to modify or repair the equipment.

Settings, if temperature is displayed in °C:

Code				
C111	0	0	0	0
C112	2	0	0	0
C113	0	5	3	4
C114	1	0	0	1
SPL	0	0	4	0
SPH*	0	1	4	0

* with return air cooler in use: 0 1 8 0

Parameter	Parameter set 1
AL1	20.0
HYS1	1
rASd	5.0

Settings, if temperature is displayed in °F

Code				
C111	0	0	0	0
C112	2	0	3	0
C113	0	5	3	4
C114	1	0	0	1
SPL	0	1	0	4
SPH*	0	2	8	4

* with return air cooler in use: 0 3 5 6

Parameter	Parameter set 1
AL1	68.0
HYS1	1
rASd	19.0

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Basic setting thermo regulator CTT 70

This information is intended to be used only by Colortronic service personnel and trained personnel authorized by Colortronic.

Other persons are not permitted to modify or repair the equipment.

Settings, if temperature is displayed in °C:

Code				
C111	0	0	0	0
C112	2	0	0	0
C113	0	5	3	4
C114	1	0	0	1
SPL	0	0	4	0
SPH*	0	1	4	0

* with return air cooler in use: 0 1 8 0

Parameter	Parameter set 1
AL1	20.0
HYS1	1
rASd	5.0

Settings, if temperature is displayed in °F

Code				
C111	0	0	0	0
C112	2	0	3	0
C113	0	5	3	4
C114	1	0	0	1
SPL	0	1	0	4
SPH*	0	2	8	4

* with return air cooler in use: 0 3 5 6

Parameter	Parameter set 1
AL1	68.0
HYS1	1
rASd	19.0

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Accessories

Spare parts list
Drying Hoppers
TT 25 - TT 6400

GB02 07/03

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Spare parts department
Telephone: **(0 61 75) 7 92-3 33**
Telefax: **(0 61 75) 7 92-1 08**

Edition: 07/03

These operating instructions are for*:

(* Please fill in personally)

Serial number: _____

Year of manufacture: _____

Date of delivery: _____

Number of delivery: _____

Date of commissioning: _____

Location: _____

Group of machines: _____

GB02 07/03

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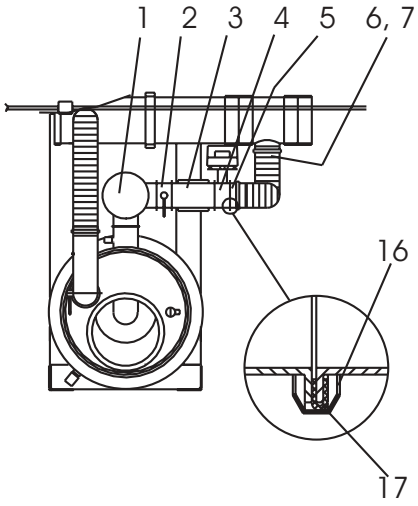
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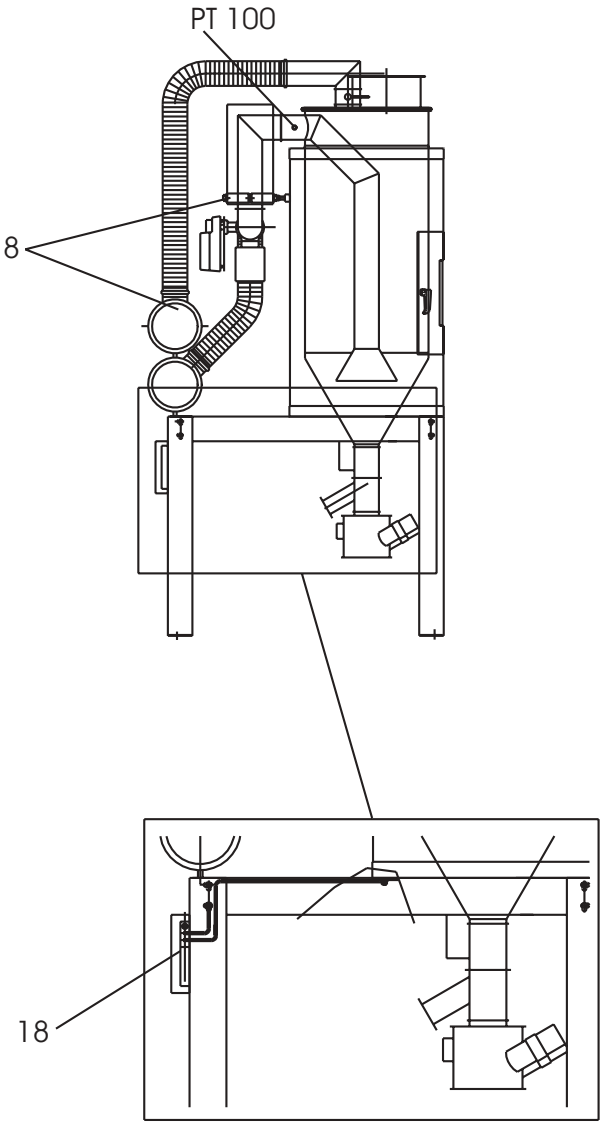
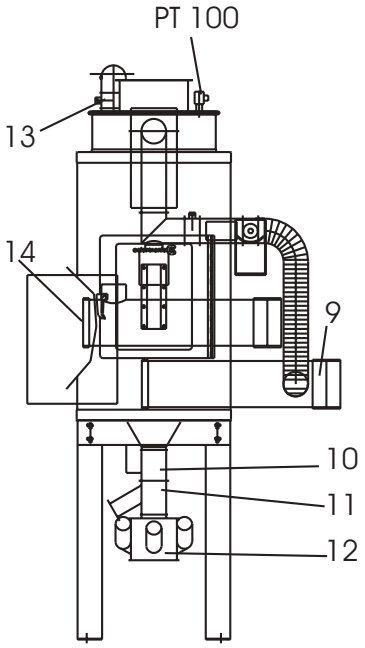

PT 100
8
18


PT 100
13
14
9
10
11
12

Pos.	ID-number	Description
1		Radiator hopper heater
	85343	1.5 kW
	85338	3.0 kW
	85363	6.0 kW
	85651	9.0 kW
	95828	18.0 kW, 27.0 kW, 36.0 kW, 63.0 kW
	87094	27.0 kW, 48.0 kW, 63.0 kW
2	18232	Hand flap Ø 80
	92241	Tension ring
2	16523	Hand flap Ø 150 (> TT 1200)
	96099	Tension ring
	94231	Dichtring
3	06925	Flow indicator Ø 80
	92241	Tension ring
	94233	Sealing ring (optional, if flap in use)
3	07418	Flow indicator Ø 150
	96099	Tension ring
	94231	Sealing ring (optional, if flap in use)
4	16517	Motor flap Ø 80
	92241	Tension ring
	28923	Cable set
4	16522	Motor flap Ø 150
	96099	Tension ring
	28923	Cable set
5	05646	Hose
6	96118	Pipe
7	95409	Hose clamp
8	84148	Hose clamp
9	84144	Hose clamp
10	30308	Flap
	92241	Tension ring
	94233	Sealing ring
11	30335	Material outlet
	92241	Tension ring
	94233	Sealing ring
12	28000	Suction box with 1 suction tube
	27985	Suction box with 3 suction tubes
	92241	Tension ring
	94233	Sealing ring

Pos.	ID-number	Description
13	18232 92241 94233	Hand flap Tension ring Sealing ring
14	30306	Lid
16	92241	Tension ring
17	94233	Sealing ring (optional, if flap in use)
18	30350	Grounding set

Multiplier PT 100:

86371	Pt 100 (3 m)
89846	Pt 100 (6 m)
93303	PT 100 (9 m)
86387	PT 100 (12 m)
83015	PT 100 (15 m)

Drying Hoppers, complete

Description	ID-number
TT 25	30301
TT 60	29767
TT 100	27976
TT 200	29768
TT 400	29769
TT 800	29770
TT 1200	32544
TT 1600	13924
TT 2400	13928
TT 3200	13939
TT 4800	13935
TT 6400	24425

(GB) Operating Instructions

WA-EKF 3054/10.97/S:MMS/D:Str./80.10.0739.7/97/00538

1. Putting into operation

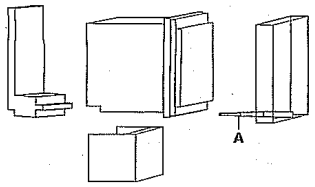
Electrical units may only be installed and assembled by a skilled electrician. (The term "skilled electrician" is defined in VDE 0105).

Notes:
The unit contains well-designed electronic components which are largely protected against external interference. However, it must be remembered that extremely high interference voltage peaks can be superimposed on the mains voltage, depending on the installation site. Interference which, despite all internal protective measures, can also effect an electronic unit also arises when contactors are switched. In order to guarantee the greatest possible operational reliability, the following details must be observed:

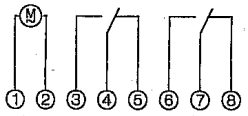
a) In the case of larger systems, a suitable varistor or RC element must be used to provide interference suppression for contactor coils directly switched by the time switch.
b) If inductive direct current loads are switched, a suppressor diode must be installed.
c) Inductive loads and particularly fluorescent lamps place particular demands on the output contacts. In each individual case, check whether it is appropriate to install an isolating relay or contactor.

2. Assembly and connection

Fit the base in accordance with local conditions.



Refer to the unit imprint/circuit diagram for connection details.



3. Sealing with sealing glass and sealing screw (A) as accessories – IP 40

Attach the sealing glass, article number 46.13.0002.4, and secure it with the sealing screw, article number 16.10.0011.8.

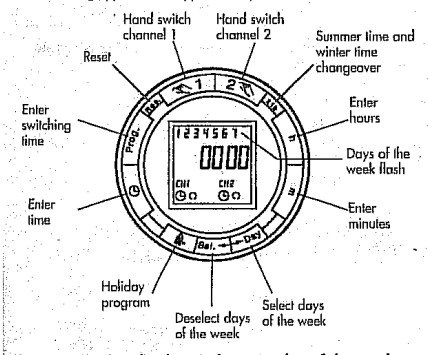
4. Operating the time switches

The steps marked with the symbol ► are necessary to carry out a switching program.

► 4.1 Reset

Press the **"Reset"** key with a pencil or similar object. This sets the time switch to its basic setting.
– before every restart
– to delete all switching times and the time

The following appears after approximately 2 seconds:



► 4.2 Entering the time and current day of the week

❶ After pressing the **"Res"** key (see 4.1):
❷ During the summer time period: press the **"±1h"** key once.
❸ Keep the "⏲" key pressed during steps ❹, ❺ and ❻.
❹ With the **"h"** key: enter the hours
❺ With the **"m"** key: enter the minutes
❻ With the **"Day"** key: enter the current day 1 = Mo ... 7 = Su
❼ Release the "⏲" key

The colon now flashes at one second intervals.

Note:
If the **"h/m"** keys are pressed for longer than 2 seconds, the display will enter fast-forward scroll mode.

► 4.3 Entering the switching times

42 memory locations are available
Each switching time occupies 1 memory location.

❶ Keep pressing the **"Prog."** key until a free memory location "– – : – –" is shown in the display..
❷ Select the switching functions "☜" (ON) or "◉" (OFF) with the "∩" key for channel 1 or 2 (depending on the version).
❸ With the **"h"** key: enter the hours
❹ With the **"m"** key: enter the minutes

If a switching command is to be executed every day, proceed with step ❺. If 1 switching command is to be executed only on one day or on certain days skip step ❺ and continue with step ❻.

❺ Save with the **"Prog."** key **or**
❻ With the **"Day"** key, select 1 day on which the switching command is not to be carried out (cursor flashes)
❼ Confirm this day with the **"Sel."** key (day of the week and cursor flash)
❽ Press the **"Day"** key (day is deselected).
Repeat steps ❻, ❼ and ❽ for every day to be deselected
❾ Save with the **"Prog."** key (the next free memory location is displayed)

or

❿ Save with the "⏲" key.

The time switch goes over to automatic mode and displays the current time.
Begin every additional switching time and the associated switching state ◉ = ON or ∩ = OFF again with 4.3.

Note:
If an input is incomplete, the segments still not selected are displayed flashing.

If you have deselected a day on which the switching command should be carried out,

❶ Reselect the deselected day with the **"Day"** key (day of the week and cursor flash).
❷ Confirm this day with **"Sel."** (cursor flashes).
❸ Press the **"Day"** key (day is reselected).
❹ Save with the **"Prog."** key (the next free memory location is displayed) **or**
❺ Save with the "⏲" key.

4.4 Free channel block formation

The channels 1 and 2 or 1 or 2 can be assigned as required to every switching command "◉" or "∩".

Note:
Note what position the switch is in, ON ◉ or OFF ∩.
Depending on the switching program and the time of day, select the desired switch position with the key ☜.
(For channel 1 and/or 2) e.g. ☜ ◉

5. Additional functions

5.1 Summer time and winter time setting

❶ Press the **"±1h"** key once.

5.2 Automatic summer time/winter time changeover

The following 3 changeover variants are available:

AU (Automatic) = fixed changeover
The S/W time changeover is performed on the basis of a predefined calendar program which is permanently programmed up until the year 2079 and cannot be changed.
(Statutory summer time ruling of the European Union and Switzerland).
Start of summer time: Always the last Saturday in March.
The hour is advanced by one hour from 2 to 3.
End of summer time: Always the last Saturday in October.
The hour is moved back by one hour from 3 to 2.

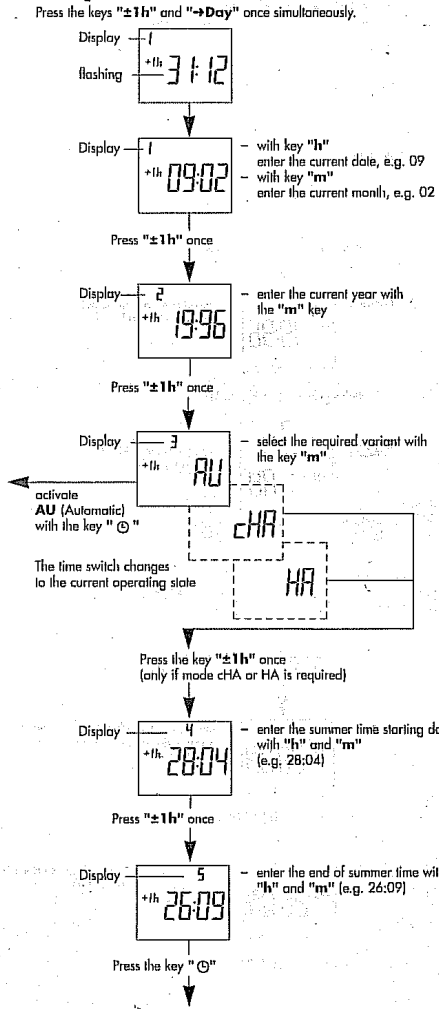
cHA (calculated semi-automatic) = freely selectable changeover with weekday reference
You enter the valid summer time starting date for your country (e.g. date of the last Friday in April of the current calendar year) and also the date on which summer time ends (e.g. date of the first Tuesday in October of the current calendar year). The program automatically assigns to this date the correct day of the week (in this case Friday and Tuesday). In the subsequent years, the time changeover always takes place on the calculated day of the week, irrespective of the date (in this case the last Friday in April and the last Tuesday in October).

HA (semi-automatic) = freely selectable changeover with date reference
You enter the valid summer time starting and end dates for your country.
In the subsequent years, the time changeover always takes place on the same date.

Activation of the automatic summer time/winter time changeover function
A requirement for the automatic S/W time changeover is that the current date is entered.
If the time switch is set to AM/PM, the month is set with the key **"h"** and the date is set with the key **"m"**.

Entering the current date

Press the keys **"±1h"** and **"→Day"** once simultaneously.


Display
flashing
+1h
31:12
Display
– with key "h" enter the current date, e.g. 09
– with key "m" enter the current month, e.g. 02
09:02
Press "±1h" once
Display
– enter the current year with the "m" key
19:96
Press "±1h" once
Display
– select the required variant with the key "m"
activate AU (Automatic) with the key "⏲"
AU
cHA
The time switch changes to the current operating state
HA
Press the key "±1h" once (only if mode cHA or HA is required)
Display
– enter the summer time starting date with "h" and "m" (e.g. 28:04)
28:04
Press "±1h" once
Display
– enter the end of summer time with "h" and "m" (e.g. 26:09)
26:09
Press the key "⏲"
The time switch changes to the current operating state

Reading the entered data

❶ Press the keys **"±1h"** and **"Day"** once simultaneously.
❷ Pressing the key **"±1h"** several times allows all entered data to be read in turn
❸ The key "⏲" allows you to return to the current operating state at any time.

Changing the entered data

Changes can only be carried out in the variants cHA and HA.

❶ Press the keys **"±1h"** and **"Day"** once simultaneously
❷ Press the key **"±1h"** twice
❸ Select the variant cHA or HA with the key **"m"**
❹ Alter the changeover times as described in Figs. 1 to 5.

Deactivating the automatic S/W changeover function

❶ Press the keys **"±1h"** and **"Day"** once simultaneously.
❷ Press the key **"h"** until "– –" appears (after the last day in the relevant month)
❸ Press the key "⏲": The clock changes to the current operating state.

The S/W time changeover can then be performed either manually by pressing the key **"±1h"** once or new data can be entered as shown in Figs. 1 to 5.

5.3 Manual switch "☜"

The current switching state can be changed at any time with the "☜" key for channel 1 or 2 (depending on the version). Use of this manual override facility does not alter any of the programmed information.

Automatic Mode ⏲	Manual Mode ☜	Continuous Operation [◉] [∩]
⏲ ◉ = ON	∩ ☜ = OFF	[◉] = Continuous ON
⏲ ∩ = OFF	◉ ☜ = ON	[∩] = Continuous OFF
The switching times correspond to the entered program.	If the current switching state is changed manually, the next switching command is again executed automatically according to the entered switching program.	You can only return to automatic mode from the [◉] and [∩] switching modes by pressing the "☜" key.

5.4 Reading the programmed switching times

❶ Press the **"Prog."** key several times:
– displays all entered switching times starting with the first memory location.
– the first free memory location "– – : – –" is then displayed.
– the number of memory locations still free is then displayed
If the memory locations are occupied, the following appears in the display: "FR 00"
❷ Press the "⏲" key:

The time switch changes to automatic mode and displays the current time.

5.5 Changing the programmed switching times

❶ Keep pressing the **"Prog."** key until the switching time to be changed is displayed
❷ The new data can then be entered as described in Point 4.3.

Note on saving switching times:
If programming is not completed with the "⏲" key after the switching time is entered (4.3), the complete switching command is still automatically saved after approximately 90 seconds. The time switch then changes to automatic mode and shows the current time again

5.6 Deleting individual switching times

❶ Keep pressing the **"Prog."** key until the switching time to be deleted is displayed.
❷ Set to "– –" with the **"h"** or **"m"** key and then press the "⏲" key for about three seconds.

The switching time is deleted and the current time is displayed after the key is released.

5.7 AM/PM time display

If the **"±1"** key and the **"h"** key are pressed simultaneously, the time display is switched to AM/PM mode (used mainly in English-speaking countries).

5.8 Holiday program

Note:
The holiday program has priority over the standard week program.
The holiday program can only be entered if all seven days of the week (1234567) are selected.

Enter switching times for the holiday period as described under 4.3. Whilst programming, the " key must be pressed to denote a holiday instruction.
The "⏲" key must be pressed for each switching time.
Next, save the holiday switching times with the **"Prog."** or "⏲" key.

Entering the start and duration of the holiday program

❶ After entering the switching times for the holiday program
❷ Press the " key once. The following image appears:

Image I

❸ If the holiday program is to start on a different day to the current one – max. 6 days ahead – use the **"Day"** key to select the day on which the holiday program is to commence.
If the holiday program is to be executed for up to max. 99 days, continue with steps ❹+❺.
If the holiday program is to be executed for an unlimited period, leave out step ❹ and continue with step ❺.
❹ Enter the required number of holiday days with the **"Sel."** key (1 to max. 99 days).
❺ Press the "⏲" key to save the entries.
If the current day of the week was entered as the holiday program start, the following appears:

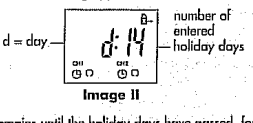


Image II

Image II remains until the holiday days have passed, for example d:10, d:09, d:08 ..... etc.
Pressing the "⏲" key again and holding it down now allows the day of the week, the time and the current switching state – "◉" = ON or "∩" = OFF – to be checked.
If a day of the week other than the current day was entered as the holiday program start, the current time is displayed after the "⏲" key is pressed.
The holiday program is then started at midnight at the start of the selected day of the week and its duration is displayed (Figure II)
After the programmed holiday days have expired, the current time appears in the display.

Aborting the holiday program prematurely

If the holiday program has already started:
● Press the " key once

If the holiday program has not yet started:
● Press the " key twice

6. Technical data

Connection	see unit imprint
Switching capacity	see unit imprint
Ambient temperature	–10 °C to +55 °C
Running reserve	150 h at +20 °C
Memory locations	42
Shortest switching time	1 min.
Programmable	every minute
Protection	IP 20